

REMARKS

In response to the Office Action mailed December 6, 2007, Applicant respectfully requests reconsideration. Claims 1-14 were last presented for examination. In the outstanding Office Action, claims 1-14 are rejected. By the foregoing Amendments, claims 1, 12 and 14 have been amended. Thus, upon entry of this paper, claims 1-14 will continue to be pending in this application. Of these fourteen (14) claims, three (3) claims (claims 1, 12 and 14) are independent.

Based upon the above Amendments and following Remarks, Applicant respectfully requests that all outstanding objections and rejections be reconsidered, and that they be withdrawn.

Claim Rejections

Claims 1-7 and 9-14 have been rejected under 35 U.S.C. § 102 (b) as being anticipated by Brodov et al. (Russian Patent no. 2,140,018); and claim 8 has been rejected under 35 U.S.C. under 35 U.S.C. § 103(a) as being unpatentable over Brodov et al. in view of legal precedent.

35 U.S.C. § 102 Rejection

In the outstanding Office Action, claims 1-7 and 9-14 have been rejected under 35 U.S.C. § 102(b). Specifically, the Examiner asserts that the present invention is anticipated by Brodov et al. Applicant respectfully traverses this rejection.

Brodov et al. generally discloses methods of generating differential motion in two-dimensional volumetric displacement machines such as motors, compressors, pumps and internal combustion engines such as Diesel, Otto, and Wankel engines. Brodov et al. also discloses means to increase the number of independent degrees of freedom of rotational motion to two and the number of working cycles of change in volume of combustion chambers in internal combustion engines¹. Thus, Brodov et al. is dedicated to two-dimensional machines. In contrast thereto, claim 1 of the present invention recites:

¹ See Brodov et al. at Abstract

A method of transforming a motion in a volume screw machine, said machine having at least two sets of conjugated elements (80, 70; 60, 50), each set comprising a first element (80, 60) having an inner screw surface (180, 160) centered around a first axis (passing through centre O) and a second element (70, 50) having an outer screw surface (270, 250) centered around a second axis (passing through centers Om_2 , Om_1), wherein an inner set (50, 60) of conjugated elements is placed coaxially in at least one cavity of the second element of an outer set (80, 70) of conjugated elements,

wherein the first and second axes (passing through centers O; Om_1 , Om_2) are parallel and wherein at least one of said first and second elements of each set is rotatable about its axis, *wherein the screw surfaces are non-cylindrical and radially limit the conjugated elements*,

said method comprising:

creating a rotary motion of at least one element in each set (emphasis added).

As recited in claim 1, the method of the present invention is directed to a method of transforming motion in a volume screw machine *wherein the screw surfaces are non-cylindrical and radially limit the conjugated elements* (emphasis added). Brodov et al. nowhere discloses generating motion in a volumetric screw machine wherein the screw surfaces are non-cylindrical and radially limit the conjugated elements. Since Brodov et al. does not disclose the generation of motion in a volumetric screw machine wherein the screw surfaces are non-cylindrical and radially limit the conjugated elements, it does not disclose each and every element of claim 1 and thus does anticipate claim 1. Claims 12 and 14 recites similar limitations.

That is, claims 12 and 14 are directed to a volume screw machine wherein the screw surfaces are non-cylindrical and radially limit the conjugated elements. As discussed above, Brodov et al. is not directed to such a machine and thus cannot anticipate claims 1, 12 and 14 of the present invention. Accordingly, independent claims 1, 12 and 14 are, therefore, patentable and Applicant respectfully requests, that the rejection of claims 1, 12 and 14 be reconsidered and withdrawn. Moreover, dependent claims 2-11 and 13 respectively depend from claims 1 and 12 and, accordingly, are also patentable for at least the same reasons.

Moreover, on page 7, outstanding Office Action indicates that ‘the use of the word “screw” does not further limit the apparatus since the Examiner considers this terminology to be the applicant being their own lexicographer, because no figure reveals what the applicant is adding by the word “screw”. Applicant respectfully acknowledges that independent claims 1 and 12 include the word “screw”, in the expression “a volume screw machine”. However, in the very beginning of the specification, Applicant recites the main components of a volumetric screw machine (page 1, lines 9-16). In particular, the recitation indicates that the screw surfaces are non-cylindrical.

To further clarify the meaning of this expression, Applicant also states ‘A rotary screw machine of three-dimensional type of that kind is known from US 5,439,359’. This points out that the invention is directed to a rotary screw machine is of a three-dimensional type, and provides general information about such volume screw machines. Indeed the cited document US 5,439,359 discloses a volume screw machine, with two conjugated elements 4,5, appearing in longitudinal cross-section on figures 20, 21, 22, 23 and 28, and having inner and outer screw surfaces 40,50 which are non-cylindrical.

The other patent references on page 2 (US 3,975,120 and FR-A-997957) also disclose (three-dimensional) volume screw machines, also with conjugated elements having non-cylindrical screw surfaces. Applicant, therefore, respectfully believes that the expression “volume screw machine” is clearly defined for one skilled in the art, and more precisely, that there is no possible understanding that a volume displacement machine whose conjugated elements have cylindrical side surfaces might be a volume screw machine (the conjugated elements of the latter do not have cylindrical side surfaces). To clarify this feature, and as discussed above, amended claims 1, 12 and 14 now recite that the screw surfaces radially delimiting the elements are non-cylindrical. Moreover, concerning claims 3 and 14, we respectfully disagree with the rejection of claim 3. In particular, claim 3, like claim 1 is directed to the relative motion of elements of two different sets. The outstanding Office Action cites page 11, lines 7-13 of Brodov et al. and explains that if an element has a planetary motion around another element, it is inherent that there would be a constant distance relationship maintained between the elements. However, the cited passage relates to two conjugated elements, but does not provide any information or suggest anything about the behaviour of elements pertaining to two different sets of conjugated elements.

35 U.S.C. § 103 Rejection

The outstanding Office Action has rejected claim 8 of the present invention under 35 U.S.C. § 103(a) as being unpatentable over Brodov et al. in view of legal precedent. The Examiner states that Brodov et al. fails to disclose two sets of conjugate elements comprising

differential motion and asserts that it would have been obvious to one of ordinary skill at the time the invention was made to have differential motion in both sets of conjugate elements.

Applicant respectfully disagrees with the Examiner's rejection of claim 8. As pointed out with respect to the Examiners rejection under 35 U.S.C. 102, Brodov et al. does not disclose a screw machine a volume screw machine wherein the screw surfaces are non-cylindrical and radially limit the conjugated elements.

Moreover, there is no teaching or suggestion in Brodov et al. that would encourage one skilled in the art to modify that which is disclosed in Brodov et al. to arrive at the present invention. It would not have been obvious, therefore, for a person skilled in screw machines, to use the teachings of Brodov et al. to design a screw machine as recited in claims 1, 12 and 14 with surfaces that are non-cylindrical and which radially limit the conjugated elements. Moreover, it has been shown above that claim 1 is patentable. Claim 8 depends from claim 1 and is therefore patentable for at least that reason.

Dependent Claims

The dependent claims incorporate all of the subject matter of their respective independent claims and add additional subject matter, which makes them *a fortiori* independently patentable over the art of record. Accordingly, Applicants respectfully request that the outstanding rejections of the dependent claims be reconsidered and withdrawn.

Conclusion

In view of the foregoing, this application should be in condition for allowance. A notice to this effect is respectfully requested.

A fee for Continued Examination accompanies this reply along with a fee for a Three-Month Extension of Time. Please charge our Deposit Account No. 22-0185, under Order No. 22193-00008-US1 from which the undersigned is authorized to draw.

Applicants reserve the right to pursue any cancelled claims or other subject matter disclosed in this application in a continuation or divisional application, cancellations and amendments of above claims, therefore, are not to be construed as an admission regarding the patentability of any claims and Applicants reserve the right to pursue such claims in a continuation or divisional application.

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